

<p>93-321708/41 A60 E15 (A28) DECS 92.04.06          DEGUSSA AG          92.04.06 92DE-4211454 (93.10.07) C08G 59/50, 18/32, C08J          3/24, C08L 63/00, 75/00, C08K 5/17, C08G 18/65          Isophorone-di-amine mixts. with above 40 per cent trans isomer -          useful as hardeners in epoxy, polyurethane and polyurea resins to          give longer working time and lower peak exotherm          C93-143116          Addnl. Data: PIANA H, HUTMACHER K</p>	<p>A(1-E5)E(10-B1E)N(1-C, 2-B1, 2-C1, 2-E, 2-F2, 3-A, 4-A)</p>
<p>The use of isophorone-diamine (IPDA) isomer mixts. (1) contg. more than 40% trans-isomer and less than 60% cis-isomer as reactants in poly-addn. resins of the epoxide, polyurethane and polyurea types is claimed.</p> <p><b>ADVANTAGES</b>          Due to steric hindrance at the axial amine methyl gp. on C3, IPDA mixts. (1) are less reactive than the normal mixts. contg. 75% cis- and 25% trans-isomer. Polyaddn. resin compsn. contg. (1) as hardener therefore have a longer pot life (working time), combined with a lower peak curing exotherm, reduced shrinkage on curing, good mechanical properties and good adhesion etc.</p> <p><b>EMBODIMENT</b>          (1) contains more than 50-70% trans-IPDA and less than 50-30% cis-IPDA. Such mixts. are obt'd. by reaction of 2</p>	<p>moles isophoronedinitrile with 1 mole hydrazine to form the corresp. nitrile-azine, followed by hydrogenolysis in the presence of ammonia, catalyst (e.g. supported Ni catalyst, noble metal or Raney Ni or Co) and cocatalyst (e.g. ammonium salts, salts of Ni, Al, La, Ru, Pt etc.). (1) can be used alone or with other known amine hardeners.</p> <p><b>EXAMPLE</b>          84 pts. wt. epoxy resin based on Bisphenol A diglycidyl ether (epoxide no. 5.30 equivs./kg; viscosity 10,400 mPa.s) was mixed with 20 pts. wt. IPDA (59% trans, 41% cis) at 23 °C and 50% RH, and the mixt. was degassed for 5 mins. at 20 hPa. The mixt. had pot life (10 g/23 °C), 245 mins.; peak exotherm T<sub>max</sub> (20 g), 24 °C; time to T<sub>max</sub>, 150 mins. (cf. 240 mins., 28°C, 150 mins. if commercial IPDA contg. 24% trans and 76% cis isomer was used instead). (6pp1712MB DwgNo0/0)</p>

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